

# EUROPEAN PATENT OFFICE

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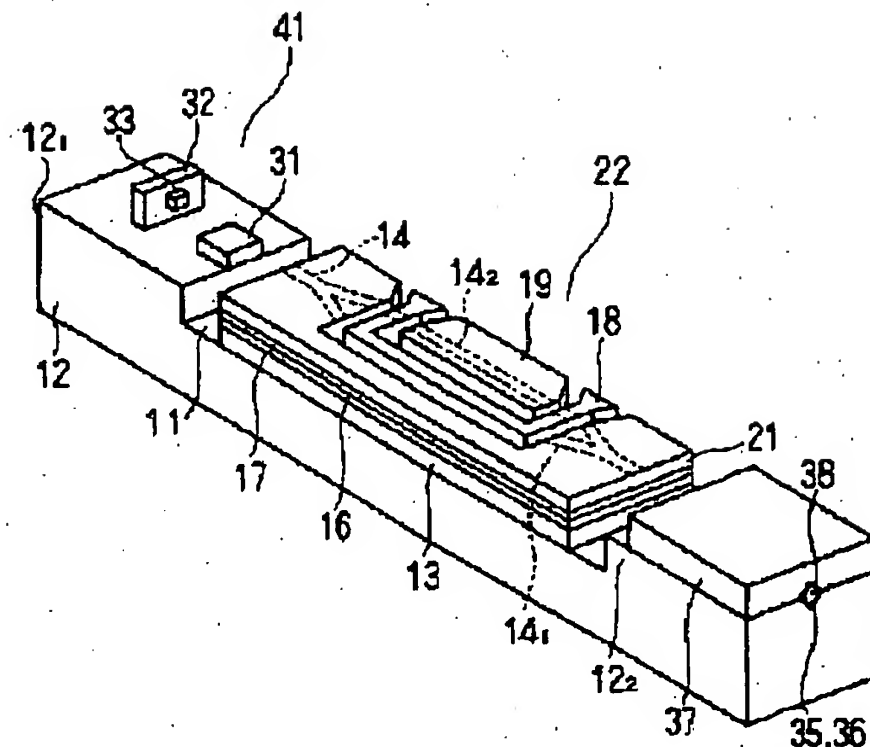
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APPLICANT : NEC CORP;

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G02B 6/42

TITLE : INTEGRATION TYPE OPTICAL  
MODULATOR



ABSTRACT : PROBLEM TO BE SOLVED: To obtain an integration type optical modulator capable of attaining the high density of optical parts.

SOLUTION: Dielectric crystal 13 is formed on the recessed part of a silicon substrate 12 of which both end parts are formed as projected parts 12<sub>1</sub>, 12<sub>2</sub>, an optical waveguide 14 is formed on the crystal 13 and a signal electrode 18 and a ground electrode 19 are formed on the waveguide 14 to prepare a modulation element 22. A light emitting element 41 consisting of an LD pair chip 31 is arranged on the projected part 12<sub>1</sub> arranged on an incident side, a V groove 35 is formed on the other projected part 12<sub>2</sub> and an optical fiber 38 arranged along the groove 35 is fixed by a glass cover 37. Since the light emitting element 41 and the modulation element 22 are arranged on the substrate 12, optical parts are integrated at high density and the size of the optical modulator is reduced.

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